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| 10/572,628      | 03/17/2006  | Tammy Georgette Amos | CL2244 US PCT       | 4936             |

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| EXAMINER |
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LAO, MARIALOUISA

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| ART UNIT | PAPER NUMBER |
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1621

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09/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/572,628 | <b>Applicant(s)</b><br>AMOS ET AL. |  |
|                              | <b>Examiner</b><br>M. Louisa Lao     | <b>Art Unit</b><br>1621            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>9/24/07</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____.   |

## **DETAILED ACTION**

### ***Continued Examination***

1. Upon further consideration of the Applicants' arguments, the finality of the Office Action mailed on 7/18/2007 is withdrawn.

### ***Response to Arguments***

2. Applicant's arguments, see REMARKS, filed 9/5/07, have been fully considered as follows:

- a. with respect to the rejection of claims 1-7 and 15-16 under 35 U.S.C. 102(b), are persuasive. The rejection of claims 1-7 and 15-16 has been withdrawn.

- b. with respect to the rejection of claims 8-14 under 35 U.S.C. 103(a), are not persuasive. In light of new grounds of rejection and upon further consideration, the rejection of claims 8-14 is maintained, as stated below. Discussion follows *infra*.

### ***Specification***

3. The specification is objected to because of the following informalities: line 7 page 13, there is missing information for the PCT reference stated. Appropriate correction is required. Applicant is further respectfully reminded to check the specification for grammatical and typographical errors.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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6. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It does not reasonably provide enablement for the chromium-containing catalyst composition recited in claims 1-7. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make/use the invention commensurate in scope with these claims. The factors to be considered [in making an enablement rejection] have been summarized as a) the nature of the invention, b) the breadth of the claims, c) the state of the prior art, d) the relative skill of those in the art, e) the predictability or unpredictability of the art, f) the amount of direction or guidance presented, g) the presence or absence of working examples, and h) the quantity of experimentation necessary.

**a) the nature of the invention:** the instant claims are drawn to a chromium containing catalyst composition comprising zinc chromite and crystalline alpha-chromium oxide and 10-67 atom percent of chromium in the composition, at least 70 atom percent zinc in the composition and at least about 90 atom percent of the chromium present as chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide.

**b) the breadth of the claims:** the claims are geared towards the composition as recited in a)

**c&e) state and predictability of the art.** The claimed compounds are not novel. The catalyst composition recited has been explored and variations thereto, cited prior art is of record.

**d) the relative skill of those in the art:** the skill is high.

***e&f) amount of guidance present and working examples.*** The instant disclosure provides no guidance for “atom percent chromium” or atom percent zinc” recited in the claims. It is unclear what Applicants mean with “at least about 90 atom percent of the chromium present as chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide. The specification provides working examples, but with no guidance as to “atom percent”.

***g) quantity of experimentation needed.*** The quantity of experimentation required of a person having ordinary skill in the art could potentially be infinite without further guidance. The working examples may appear to have weight ratios and percentages, but provides no guidance as to atom percent calculations recited or equivalent to the recitations in the claims. All these elements taken into consideration make the experimentation unduly burdensome.

MPEP 2164.01(a) states, "A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification, at the time the application was filed, would not have taught one skilled in the art how to make and/use the full scope of the claimed invention without undue experimentation. In re Wright 999 F.2d 1557,1562, 27 USPQ2d 1510, 1513 (Fed.Cir.1993)." That conclusion is clearly justified here. Thus, undue experimentation will be required to practice Applicants' invention.

7. **Claims 8-14 are rejected** under 35 U.S.C. 112, first paragraph, , as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It does not reasonably provide enablement for the chromium-containing catalyst composition recited in claims 1-7. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make/use the invention commensurate in scope with these claims. The factors to be considered [in making an enablement rejection] have been summarized as a) the

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nature of the invention, b) the breadth of the claims, c) the state of the prior art, d) the relative skill of those in the art, e) the predictability or unpredictability of the art, f) the amount of direction or guidance presented, g) the presence or absence of working examples, and h) the quantity of experimentation necessary.

**a) *the nature of the invention:*** the instant claims are drawn to a process for changing the fluorine distribution in a halogenated hydrocarbon by using the catalyst composition comprising chromium containing catalyst composition comprising zinc chromite and crystalline alpha-chromium oxide and 10-67 atom percent of chromium in the composition, at least 70 atom percent zinc in the composition and at least about 90 atom percent of the chromium present as chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide. The process further entails reaction of the halogenated hydrocarbon with HF in the vapor phase

**b) *the breadth of the claims:*** the claims are geared towards the process using the catalyst composition of claims 1-7.

**c&e) *state and predictability of the art.*** The process of fluorination is not novel. The process is well known in the art (US'061 [0028] page 3).

**d) *the relative skill of those in the art:*** the skill is high.

**e&f) *amount of guidance present and working examples.*** The instant disclosure provides working examples for fluorination in pp21-23 but provides no guidance for "atom percent chromium" or atom percent zinc" recited in the claims as catalyst compositions. It is unclear what Applicants mean with "at least about 90 atom percent of the chromium present as

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chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide. The specification provides working examples, but with no guidance as to "atom percent".

***g) quantity of experimentation needed.*** The quantity of experimentation required of a person having ordinary skill in the art could potentially be infinite without further guidance. The working examples for the fluorination process, but provides no guidance for the catalyst compositions as to atom percent calculations recited or equivalent to the recitations in the claims.

All these elements taken into consideration make the experimentation unduly burdensome.

MPEP 2164.01(a) states, "A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification, at the time the application was filed, would not have taught one skilled in the art how to make and/use the full scope of the claimed invention without undue experimentation. In re Wright 999 F.2d 1557,1562, 27 USPQ2d 1510, 1513 (Fed.Cir.1993)." That conclusion is clearly justified here. Thus, undue experimentation will be required to practice Applicants' invention.

8. **Claims 15-16 are rejected** under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It does not reasonably provide enablement for the chromium-containing catalyst composition recited in claims 1-7. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make/use the invention commensurate in scope with these claims. The factors to be considered [in making an enablement rejection] have been summarized as a) the nature of the invention, b) the breadth of the claims, c) the state of the prior art, d) the relative skill of those in the art, e) the predictability or unpredictability of the art, f) the amount of direction or guidance presented, g) the presence or absence of working examples, and h) the quantity of experimentation necessary.

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**a) the nature of the invention:** the instant claim is drawn to a method of preparing the catalyst composition comprising chromium containing catalyst composition comprising zinc chromite and crystalline alpha-chromium oxide and 10-67 atom percent of chromium in the composition, at least 70 atom percent zinc in the composition and at least about 90 atom percent of the chromium present as chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide. The process further entails reaction of the halogenated hydrocarbon with HF in the vapor phase

**b) the breadth of the claims:** the claims are geared towards the method of making the catalyst composition of claims 1-7.

**c&e) state and predictability of the art.** The process of making chromia containing catalyst is not novel. The process is well known in the art, as cited and of record.

**d) the relative skill of those in the art:** the skill is high.

**e&f) amount of guidance present and working examples.** The instant disclosure provides working examples for making the instant catalyst composition (examples on pp19-21 of the specification) but provides no guidance for “atom percent chromium” or atom percent zinc” recited in the claims as catalyst compositions. It is unclear what Applicants mean with “at least about 90 atom percent of the chromium present as chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide. The specification no guidance as to “atom percent”.

**g) quantity of experimentation needed.** The quantity of experimentation required of a person having ordinary skill in the art could potentially be infinite without further guidance. The working examples for the fluorination process, but provides no guidance for the catalyst



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compositions as to atom percent calculations recited or equivalent to the recitations in the claims.

All these elements taken into consideration make the experimentation unduly burdensome.

MPEP 2164.01(a) states, "A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification, at the time the application was filed, would not have taught one skilled in the art how to make and/use the full scope of the claimed invention without undue experimentation. In re Wright 999 F.2d 1557,1562, 27 USPQ2d 1510, 1513 (Fed.Cir.1993)." That conclusion is clearly justified here. Thus, undue experimentation will be required to practice Applicants' invention.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

10. Claims 1-3 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "about" in claims 1-3 and 15 is a relative term, which renders the claims indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. One of ordinary skill, without proper guidance, would be precluded from ascertaining the metes and bounds of the claims.

11. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites "catalyst composition comprising chromium containing catalyst composition comprising zinc chromite and crystalline alpha-chromium oxide and 10-67 atom percent of chromium in the composition, at least 70 atom percent zinc in the composition and wherein at least 90 atom percent of the chromium present as chromium oxide in the composition is present as zinc chromite or crystalline alpha-chromium oxide". It is unclear how the at least 90

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atom percent will be measured relative to the 10-67 atom percent in the composition; i.e. the 90 atom percent will render the net atom percent of Cr to be lower.

***Claim Rejections - 35 USC § 102/103***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. The **rejection of Claims 8-14 is maintained** under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (US2001/0011061, US'061) and **claims 1-16 are rejected** under 35 U.S.C. 102(b) as being anticipated by, or in the alternative rendered obvious over Scott et al. (US2001/0011061, US'061).

17. The instant claims are drawn to a process for changing the fluoride distribution in a halogenated hydrocarbon, or incorporating fluorine in a saturated or unsaturated hydrocarbon, in the presence of chromium-containing catalyst compositions by reacting said compound with hydrogen fluoride in the vapor phase.

18. US'061 teaches in page 3 Example a chromia catalyst containing 1% by weight zinc prepared by a mixed metal hydroxide precipitation technique that engages the use of 4 L 1M chromium nitrate, 12 ml 4M zinc nitrate, 740ml 0.88M NH<sub>4</sub>OH – heated at 425deg C for 16 hours, cooled with N<sub>2</sub> gas with 45% crystallinity. Said catalyst was used for the fluorination of chloro-2,2,2-trifluorethane under HF flow to yield 1,2,1,2-tetrafluorethane.

19. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to use the fluorination process with the parameters as disclosed therein by US'061 with the chromia catalyst therein, since this method is a process for the production of a halogenated hydrocarbons, which is essentially a fluorination technique akin to the instant claims.

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20. One having ordinary skill in the art would have been motivated to use the process taught by US'061 for the production of a halogenated hydrocarbons since the fluorination processes are equivalent and the artisan would have reached a reasonable expectation of success .

The claim would have been obvious because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

The claim would have been obvious because “ a person or ordinary skill has a good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product, not of innovation, but of ordinary skill and common sense.

21. Absent a clear showing of calculations, the chromia catalyst taught by US'061 are equivalent to the instant catalyst and would therefore be useful for the equivalent instant fluorination process.

22. The prior art renders the instant claims unpatentable.

#### ***Response to Arguments***

23. Applicant's arguments with respect to claims 8-14 have been considered. Applicants have presented and exemplified several zinc chromite and chromium oxide ratios to contest that the cited prior art reference does not encompass the instant chromium-catalyst composition. However, Applicants have reiterated numerous in the arguments that the instant composition contains 10-67 atom percent Cr. Applicants have not provided a showing as to how the mole percent or weight percent that would be equivalent to the instant “atom percent” of chromium or zinc in the composition as recited would be arrived at. Absent this guidance, the cited prior art reference using the mixed metal hydroxide precipitation technique would inevitably produce an equivalent chromium-containing catalyst system, the functionality of which for fluorination will be akin to the instant process.

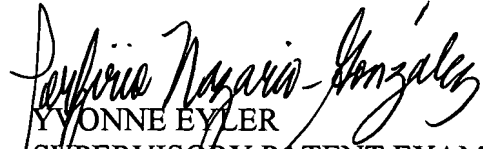
24. No claims are allowed.

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*Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached on Mondays to Thursdays from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 1621

for   
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